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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,694	02/27/2004	Stephen M. Potter	3932	9316

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EXAMINER	
MCNELIS, KATHLEEN A	
ART UNIT	**PAPER NUMBER**
1742.	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,694	POTTER ET AL.	
	Examiner	Art Unit	
	Kathleen A. McNelis	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-6 and 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-6 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claims Status

Claims 1, 4-6 and 9 remain for examination wherein claim 1 is amended.

Acknowledgement of RCE

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CRF 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.115, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/09/2006 has been entered.

Status of Previous Rejections

The following rejections are withdrawn in view of cancellation and amendment to claims:

- Claims 7, 8 and 10 under 35 U.S.C. 112, 1st paragraph,
- Claims 1, 3-6, and 9 under 35 U.S.C. 103(a) as being unpatentable over Meissner et al. (U.S. Pat. No. 5,437,708 in view of PBK Engineering Ltd (1992) and Stephens, Jr. (U.S. Pat. No. 5,810,906),
- Claim 2 under 35 U.S.C. 103(a) as being unpatentable over Meissner et al. (U.S. Pat. No. 5,437,708 in view of PBK Engineering Ltd (1992) and Stephens, Jr. (U.S. Pat. No. 5,810,906) as applied to claim 1 and further in view of Stoughton (1908),
- Claim 7 under 35 U.S.C. 103(a) as being unpatentable over Villarreal-Trevino et al. (U.S. Pat. No. 6,395,056) in view of Meissner et al. (U.S. Pat. No. 5,437,708), and
- Claims 8 and 10 under 35 U.S.C. 103(a) as being unpatentable over Villarreal-Trevino et al. (U.S. Pat. No. 6,395,056) in view of Meissner et al. (U.S. Pat. No. 5,437,708) as applied to claim 7 above, and further in view of Becerra-Novoa et al. (US patent 5,445,363).

Examiner's Comments

The recitation in claim 1 of "...prior to charging the feed material to a gas-based direct reduction furnace" does not positively recite the step of charging the feed material to the furnace. This should be amended if this portion of the disclosure is to be given patentable weight.

DETAILED ACTION

Specification

The amendment filed 05/26/06 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The additional text "where the hot waste off-gas" to p. 2 changes the scope of the original disclosure from heating ore to at least about 200 °C.

Applicant is required to cancel the new matter in the reply to this Office Action.

Drawings

Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains,

or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 4-6 and 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The original disclosure (paragraph bridging pp. 8-9 of specification) clearly requires heating ore to at least about 200 °C, but preferably to at least 300 °C. This does not support the 05/26/2006 amendment to claim 1 of heating to less than 200 °C or the 01/20/2006 amendment of heating to less than 300 °C. This is a new matter rejection.

Further, the specification does not enable one of ordinary skill in the art to heat ore to a temperature of less than 200 °C (a range which includes ≤ 0 °C) and achieve drying to less than 0.5 wt% water. This is a lack of enablement rejection.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando et al. (U.S. Pat. No. 3,831,913) in view of applicant's admitted prior art (specification p. 4 lines 10-14).

With respect to claims 1 and 5, Ando et al. discloses a method for reducing iron in a rotary kiln (abstract) where the iron is compound pellets or lumps of ore (col. 5 lines 43-49). Ando et al. discloses drying in a traveling grate drying and preheating device (col. 7 lines 45-51). In an

example, pellets are dried to about 0.5-wt% water content prior to charging into the rotary kiln (col. 9 lines 51-68). Although pellets are used in the example, one of ordinary skill in the art would expect to dry lumps to the same water content, since Ando et al. discloses equal utility for lump and pellet feed and since the same process is used. A portion of preheated air (54) is supplied to the dryer (33) and the temperature adjusted by blower (56) (col. 8 lines 45-53). Although Ando et al. does not disclose that drying is performed at a temperature of less than 200 °C (claim 1) or the temperature of off-gas is in excess of 300 °C (claim 5), it is well settled that where the principal difference between a claimed process and that taught by reference is a temperature difference, it is incumbent upon applicants to establish the criticality of that difference (Ex parte Khusid, et al., 174 USPQ 59).

Ando et al. does not disclose storing the ore for at least one month.

The instant specification teaches in the description of prior art (p. 4 lines 10-14) that some sedimentary lump ores need to release internal stresses prior to being subjected to high temperatures, and that these may be released either by increasing storage time or predyring at low temperatures or by a combination of both. Therefore storage time and drying temperature are result effective variables and would be optimized by one of ordinary skill in the art (see M.P.E.P 2144.05, II, B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize storage time and drying temperature to release internal stresses prior to subjecting lump ores to high temperatures, since compressive strength is desired in Ando et al. (col. 10 lines 15-52).

The grate drying preheating device disclosed by Ando et al. serves essentially the same function as the feed storage bin in instant claims 4 and 5, and further is heated with waste off-gas as discussed above. Motivation to alter the shape or configuration of a component (i.e. preheating

device) disclosed by the prior art without altering the component's function to any other equally useful shape or configuration would have been obvious to one of ordinary skill in the art at the time the invention was made (see M.P.E.P. 2144.04 IV A and B).

Although Ando et al. discloses optionally adding limestone or dolomite (col. 5 lines 36-49), the addition of lime coated pellets is not disclosed, and the addition of limestone or dolomite is optional, therefore Ando et al. teaches charging separately from lime coated pellets as in instant claim 9.

Claims 1, 4-6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vilarreal-Trevino et al. (U.S. Pat. No. 6,395,056) in view of applicant's admitted prior art (specification p. 4 lines 10-14).

With respect to claim 1, Vilarreal-Trevino et al. discloses a method for reducing iron ore using a preheating device to preserve the strength of the iron ore (abstract). Villarreal-Trevino et al. discloses that the purpose of pre-treatment in non-reducing conditions is to strengthen the ore, thereby decreasing the formation of fines in the reduction reactor (abstract and col. 2, lines 13-16). Villarreal-Trevino et al. indicate that their invention is concerned with preserving the strength of "iron ore lumps or pellets" (col. 1, lines 59-61).

Villareal-Trevino et al. does not disclose that the ore is stored for at least one month or dried at a temperature of less than 200 °C.

The instant specification teaches in the description of prior art (p. 4 lines 10-14) that some sedimentary lump ores need to release internal stresses prior to being subjected to high temperatures, and that these may be released either by increasing storage time or predyring at low temperatures or by a combination of both. Therefore storage time and drying temperature are result effective variables and would be optimized by one of ordinary skill in the art (see M.P.E.P

2144.05, II, B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize storage time and drying temperature to release internal stresses prior to subjecting to high temperature as taught by the admitted prior art in the process of Villareal-Trevino et al. since preserving the strength of the ore is desired in Villareal-Trevino et al.

Although Villareal-Trevino et al. does not recite that the ore is dried to a water content of less than about 0.5 wt% water, such would be expected since Villareal-Trevino et al. pretreats essentially the same material (lump ore) by essentially the same method (preheating and consequentially drying with waste off-gases).

With respect to claims 4 and 5, Villarreal-Trevino et al. disclose a process wherein pre-heating is performed in a feed storage bin which is heated by waste off-gases at a sufficient temperature to heat the feed material in the storage bin (col. 3, lines 31-49 and Figure 5). The temperature of the waste off-gas is not explicitly stated, however it is sufficient to heat the solids to the desired pretreatment temperature, and would therefore be a matter of routine optimization for one of ordinary skill in the art. Further, it is well settled that where the principal difference between a claimed process and that taught by reference is a temperature difference, it is incumbent upon applicants to establish the criticality of that difference (Ex parte Khusid, et al., 174 USPQ 59).

With respect to claim 6, Villarreal-Trevino et al. teach a process option (Figure 5), which includes a reformer (69) to produce the reducing gas (col. 4, lines 12-34). The reducing gas is fed to the furnace (**30**), then waste off-gases are removed from and cooled in a heat exchanger (**44**), then either returned to the reformer, treated in another manner, or combusted as part of the fuel for the pretreatment system (Figure 5).

With respect to claim 9, Villarreal-Trevino et al. does not disclose the use of lime coated feed material; therefore the charge is separate from any such feed.

Claims 1, 4-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stephens Jr. (U.S. Pat. No. 5,810,906) alone or in view of Meissner et al. (U.S. Pat. No. 5,437,708) and applicant's admitted prior art (specification p. 4 lines 10-14).

Stephens Jr. discloses a method for preheating an iron oxide feed material prior to converting the material into an iron carbide product wherein the feed is heated and dried under oxidizing conditions, then reduced to ferrous iron in a reducing stage prior to carburization (abstract). The iron oxide is typically an iron oxide ore containing a variety of materials including hematite, magnetite, goethite and limonite (col. 2 lines 37-43). Stephens Jr. removes or eliminates sulfide sulfur and moisture by preheating in the presence of an oxidizing gas (col. 2 lines 44-55), wherein the moisture is reduced to preferably no more than about 0.5 % by weight (col. 3 lines 1-16). Although Stephens Jr. does not disclose that drying is performed at a temperature of less than 200 °C, it is well settled that where the principal difference between a claimed process and that taught by reference is a temperature difference, it is incumbent upon applicants to establish the criticality of that difference (Ex parte Khusid, et al., 174 USPQ 59). Although Stephens Jr. does not recite "lump" feed, the feed material of Stephens Jr. is not in pellet form and therefore meets the limitation of lump as claimed and interpreted from the specification (p. 5 lines 8-12).

Stephens Jr. does not disclose storing the ore for at least one month.

The instant specification teaches in the description of prior art (p. 4 lines 10-14) that some sedimentary lump ores need to release internal stresses prior to being subjected to high temperatures, and that these may be released either by increasing storage time or predyring at low temperatures or by a combination of both. Therefore storage time and drying temperature are

result effective variables and would be optimized by one of ordinary skill in the art (see M.P.E.P 2144.05, II, B).

Alternatively, Stephens Jr. does not disclose solid lump feed material.

Meissner et al. discloses a method and apparatus for producing iron carbide by reacting reducing gas with iron oxide (abstract), and is therefore analogous with Stephens Jr. An example is provided wherein Mutuca lump ore is reduced and carburized to produce iron carbide (col. 8 lines 1-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Mutuca lump ore at taught by Meissner et al. in the process of Stephens Jr., since Meissner et al. teaches the use of such ore in an analogous process.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stephens Jr. (U.S. Pat. No. 5,810,906) in view of Meissner et al. (U.S. Pat. No. 5,437,708) and applicant's admitted prior art (specification p. 4 lines 10-14) as applied to claim 1.

Stephens Jr. in view of Meissner et al. and applicant's admitted prior art does not disclose that the gas in removed by a reformer.

Meissner et al. teaches the use of a reformer to recycle as reduction gas (col. 3 lines 49-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a reformer as taught by Meissner et al. in the process of Stephens Jr. since reduction gas is desired in Stephens Jr. (Fig. 1 (42)).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g.,

In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 4-6 and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 4 and 5 of copending Application No. 10/789,696 (based on PG Pub. 2004/0261575) in view of applicant's admitted prior art (specification p. 4 lines 10-14).

With respect to instant claim 1, claim 1 of '575 discloses preheating lump feed material to a temperature of 200 °C to about 500 °C. The range of 200 – 500 °C is close enough to the instant claimed temperature range of less than 200 °C that one of ordinary skill in the art would expect the same results, therefore a prima facie case of obviousness exists (M.P.E.P § 2144.05). Further, it is well settled that where the principal difference between a claimed process and that taught by reference is a temperature difference, it is incumbent upon applicants to establish the criticality of that difference (Ex parte Khusid, et al., 174 USPQ 59). Although '575 does not claim a reduction in water content to about 0.5 % by weight, such would be expected since the process of '575 dries essentially the same material by essentially the same process of heating with waste gas in a storage bin to essentially the same temperature as discussed above.

'575 does not claim storing lump feed material for at least one month.

The instant specification teaches in the description of prior art (p. 4 lines 10-14) that some sedimentary lump ores need to release internal stresses prior to being subjected to high

temperatures, and that these may be released either by increasing storage time or predyring at low temperatures or by a combination of both. Therefore storage time and drying temperature are result effective variables and would be optimized by one of ordinary skill in the art (see M.P.E.P 2144.05, II, B).

With respect to instant claim 4, claim 3 of '575 discloses preheating in a storage bin with waste off-gases.

With respect to instant claim 5, claim 4 of '575 discloses preheating with gases in excess of 500 °C which is within the range of in excess of 300 °C.

With respect to instant claim 6, claim 5 of '575 discloses a reformer associated with removal of off-gases.

With respect to instant claim 9, '575 does not claim the use of lime-coated pellet feed, therefore the charge is separate from such feed.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

Applicant's arguments with respect to claims 1, 4-6 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen A. McNelis whose telephone number is 571 272 3554. The examiner can normally be reached on M-F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAM
02/02/2007

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